Appendix D

ARB Letter to ASHRAE

August 6, 2008

Ms. Claire Ramspeck
Assistant Director of Technology for Standards and Special Projects
American Society of Heating, Refrigeration, and Air Conditioning Engineers
1791 Tullie Circle, NE
Atlanta, Georgia 30329-2305

Dear Ms. Ramspeck:

The California Air Resources Board in coordination with the California Division of Occupational Safety and Health (Cal/OSHA) and the University of California (UC) requests ASHRAE to consider the greenhouse gas implications associated with sulfur hexafluoride (SF_6) tests outlined in the ANSI/ASHRAE 110 -1995 standard (Method of Testing Performance of Laboratory Fume Hoods) and determine if there are safe and effective alternatives to SF_6. According to the Intergovernmental Panel on Climate Change (IPCC), SF_6 is a potent greenhouse gas with a global warming potential (GWP) of 23,900, one of the highest GWPs currently identified. Given this high GWP, use of an alternative gas could have a significant impact on greenhouse gas emissions, especially given the international acceptance of ASHRAE standards.

Sulfur hexafluoride emissions are of particular concern in California since the California Global Warming Solutions Act of 2006 (AB 32) sets a greenhouse gas (GHG) reduction target for California to return to 1990 levels by 2020 – an estimated reduction of about 30 percent from the business as usual scenario. AB 32 requires the California Air Resources Board (ARB) to develop a statewide program to achieve the target through strategies that are both technologically feasible and cost-effective. In order to meet the goals of AB 32, ARB is implementing a variety of strategies including regulations. One of the potential regulations relates to minimizing or eliminating SF_6 in non-utility and non-semiconductor applications, including tracer gas uses.

ARB identified tracer gas use in fume hood testing as an SF_6 emissions source with potentially viable reduction options. Fume hood tests performed according to the ASHRAE 110 guidelines emit 1.5 pounds of SF_6, or approximately 16

tonnes of CO_2 equivalent per test. ARB's initial recommended regulatory approach is to phase-out SF_6 use in this application unless required by Cal/OSHA. Alternative gases such as perfluorocarbon tracers or others, could significantly reduce greenhouse gas emissions. For example, perfluorocarbon tracers have global warming potentials of 6,000 to 10,000, less than half the GWP of SF_6. Additionally, these gases have low background concentrations and can be measured at the parts per quadrillion level. Other potential alternatives have even lower global warming potentials.

These gases are well understood and used in other similar applications such as atmospheric transport tracer studies and we would be interested in starting a dialogue with ASHRAE to facilitate the use of the options listed above. Although ARB hopes to phase-out the use of SF_6 from this application in California, greatly reduced usage of SF_6 through a reduced injection rate and more precise measurement technologies could achieve national and international reductions. The use of an electron capture device would allow for a gas release of mililiter per minute compared to the four liter per minute release currently described by the standard. According to our understanding, the use of either SF_6 at a reduced ejection rate or a substitute gas would require validation and approval from the ASHRAE 110 committee in order to be in compliance with the standard.

The ARB, in consultation with Cal/OSHA and the UC, is requesting ASHRAE to revise the fume hood standard in order to consider greenhouse gas emissions resulting from application of the ASHRAE 110 standard. Some options for consideration include revising the specifications for an alternate gas to exclude unnecessary limitations such as molecular weight, and including recommendations for alternate gases. Considering the national and international use of the ASHRAE 110 standards, global greenhouse gas emission reductions could be significant.

The ARB and Cal/OSHA would be interested in starting a dialogue with ASHRAE on SF_6 use in fume hood and other testing protocols and any corresponding research needs. In addition, ARB requests that ASHRAE inform ARB if there are other ASHRAE standards requiring SF_6 use.

ARB invites ASHRAE to participate in our technical working group on the reduction of SF_6 in non-semiconductor and non-utility applications. Additional information on the measure and working group meetings can be found at: http://www.arb.ca.gov/cc/sf6nonelec/sf6nonelec.htm

It is our hope that your participation will foster actions to better protect California citizens against climate change through reduced greenhouse gas emissions.

If you would like further information or have any questions, please contact Elizabeth Scheehle at (916) 324-0621 or escheehl@arb.ca.gov.

Sincerely,

Bart E. Croes, P.E.
Chief, Research Division

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